Rapid Systematic Review of Occupational Therapy-Adaptable Interventions to Improve Social Engagement in Children and Adolescents with Autism Spectrum Disorder

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Key Terms

- autism spectrum disorder
- autism
- occupational therapy
- social engagement
- social participation
- social involvement
- friendship
- communication
- peer
- interaction
- play

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In this rapid systematic review, we describe how evidence-based interventions aiming to improve social engagement in children and adolescents with Autism Spectrum Disorder (ASD) can be potentially adapted to be included within the scope of occupational therapy. Children and adolescents with ASD often experience difficulty with social engagement, impacting overall social participation and other aspects of daily life. It is important to address this issue within this population to ensure engagement in the occupation of social participation, which is vital to optimal health and well-being. We discovered several themes including communication, joint attention, peer engagement, social skills, and play as outcomes addressed within the interventions included in this review. There is limited research available regarding social engagement interventions for children and adolescents with ASD directly including an occupational therapist within the intervention. This review demonstrates that there is a large variety of social engagement interventions that could be implemented by occupational therapists; however, therapists must be mindful of choosing an intervention that is specific to the client's condition. There is strong evidence to suggest that interventions targeting social engagement in children and adolescents with ASD result in increased social abilities. Further research should be conducted assessing the implementation of these interventions by occupational therapists to ensure generalizability.

Children and adolescents who are diagnosed with Autism Spectrum Disorder (ASD) often have difficulty with social engagement, including the ability to communicate. Children with ASD often receive occupational therapy intervention to address these deficits. Occupational therapy can offer a multitude of interventions that target social engagement and prosocial behaviors in children and adolescents with ASD (American Psychiatric Association [APA], 2013).

According to the most recent statistics, approximately 1 in 54 children have a diagnosis of ASD, with the prevalence being four times more likely in boys (Autism Speaks, 2020). People of all ethnicities, races, and socioeconomic statuses are susceptible to the disorder (Autism Speaks, 2020). Implementing intervention for children and adolescents with ASD as early as possible is vital to providing the best opportunities and optimal health for these individuals (Autism Speaks, 2020).

Children with ASD experience a plethora of symptoms affecting several aspects of daily life, including social engagement (APA, 2013). Children's

ability to engage socially consists of many different skills including, but not limited to, joint attention, play skills, peer engagement, and social communication, affecting development and impacting optimal health (Kasari et al., 2008). Due to the lack of age-appropriate social skills, children and adolescents with ASD often have more difficulties than typically developing peers with finding and maintaining employment, forming close interpersonal platonic and romantic relationships, and confidently participating in extracurricular activities (Bellini, Peters, Benner, & Hopf, 2007; Rao, Beidel, & Murray, 2008).

Using evidence-based practice, occupational therapists work with many children diagnosed with ASD who may have difficulties engaging in the occupation of social participation. Without the ability to successfully participate in the occupation of social participation, children with ASD may experience difficulties with identity formation and having a sense of autonomy (American Occupational Therapy Association [AOTA], 2014). With a holistic approach, occupational therapists work with children with ASD regarding daily living skills, social skills, and age-appropriate activities vital to overall health and well-being (AOTA, 2017). Studies suggest children with less severe symptoms of ASD have a better prognosis of daily living skills and social participation (Szatmari et al., 2009). Occupational therapy aims to reduce the severity of ASD core symptoms to increase participation in occupations in order to improve quality of life. The purpose of this rapid systematic review was to explore possible social engagement interventions that can be adapted by occupational therapists to benefit children and adolescents with ASD.

Methods

This is a rapid systematic review examining studies that evaluate interventions that may be implemented within the scope of occupational therapy to potentially improve social engagement in children and adolescents diagnosed with Autism Spectrum Disorder (ASD). The articles included in this review were from the result of searches through PubMed, PsycINFO, and CINAHL databases. This search was conducted by review authors with guidance from the School of Health & Human Sciences and Department of Occupational Therapy librarians.

Search terms included in this review were *autism spectrum disorder, autistic disorder, Asperger syndrome, pervasive developmental disorder-not otherwise specified, autism, autistic, Asperger, ASD, PDD-NOS, social interaction, social participation, social engagement, social involvement, engagement, involvement, interaction, friendship, peer, friend, and play*. The review authors used MeSH terms and subject headings to encompass words and subjects that were associated with the search terms.

The articles selected for eligibility in this rapid systematic review included studies that focused on improving social engagement of children and adolescents with ASD. Meta analyses and systematic reviews were excluded. The search was further filtered for relevancy by the date the study was published to include results in the last 10 years. PsycINFO and CINAHL search results were filtered from 2010 to February 2020. A second search was completed on PubMed and was filtered from 2010 to March 2020. The review authors considered *social engagement* as an umbrella term which encompassed the following terms: communication, joint attention, play, peer engagement, initiations, responses, social skills, isolation or withdrawal, negative behaviors, peer preference, and hosted or invited get-togethers.

During the screening procedure, we used the following inclusion criteria: (A) *Average age 3-24 years, (B) study was conducted in the following countries: USA, Canada, UK, Sweden, Netherlands, Australia, New Zealand, Norway, Denmark, Ireland,* and (C) *interventions within the scope of occupational therapy.* Exclusion criteria included: (A) *studies exclusively focused on parent-child intervention* and *(B) pharmacological interventions.*

Covidence was used to screen articles for this rapid systematic review (Covidence, 2020). At least two review authors had to be in agreement for an article to be included. Articles with conflicting votes were reviewed again by all review authors to determine relevance for inclusion. As a group, articles were chosen to be excluded or included in the extraction process.

This rapid systematic review used *Sackett, Rosenberg, Muir Gray, Haynes, & Richardson's* (1996) level of evidence standards to rank the articles that were selected using the following grading system:

- *Level I:* Systematic reviews, meta-analyses, randomized controlled trials
- *Level II:* Two groups, nonrandomized studies (e.g., cohort, case control)
- *Level III:* One group, nonrandomized (e.g., before and after, pretest and posttest)
- *Level IV:* Descriptive studies that include analysis of outcomes (e.g., single-subject design, case series)

- *Level V:* Case reports and expert opinion that include narrative literature reviews and consensus statements.

We systematically analyzed validity and reliability and reported concerns in the discussion section of this manuscript.

Results

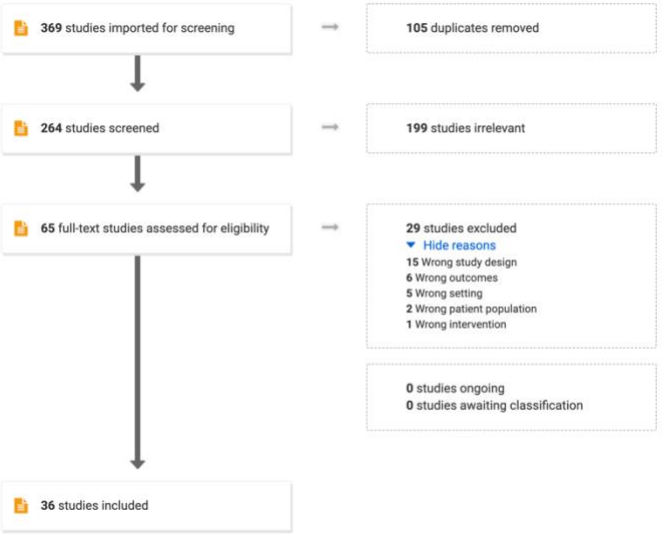
Initially, 193 studies were returned from PsycINFO and CINAHL searches. A secondary search on PubMed was completed with 176 results returned. Sixty-five full-text studies were assessed for eligibility by the study authors. The flow diagram for inclusion and exclusion is shown in Figure 1. Out of the 36 remaining studies, 30 were chosen for completion in the evidence table (see Appendix A - Table 1).

After analyzing the studies chosen for this review, we identified the following themes: targeted social skills interventions, school-based interventions, animal-assisted interventions, peer-mediated interventions, JASPER interventions, and PEERS interventions.

Targeted Social Skills Interventions

Ten studies — 7 Level I randomized controlled trials (RCTs), 2 Level II case control study, and 1 Level III one group study — within this review examined how specific targeted social skills interventions can help children and adolescents with ASD in outcomes such as social communication, peer engagement, joint attention, and emotional responses.

One Level I study and one Level II study explored different interventions aimed to improve peer engagement and provide moderate strength of evidence. These interventions included Sociodramatic Affective Relational Intervention (SDARI) and Skillstreaming, and SKILLS intervention and ENGAGE intervention. Peer engagement could consist of an increase of any peer interaction or times spent in peer engagement. The SDARI intervention focuses on teaching children how to increase social motivation (Lerner & Mikami, 2012). Within the study, the SDARI intervention was compared to the Skillstreaming intervention which is an intervention focused on teaching children correct behavioral steps (Lerner & Mikami, 2012). There were no significant results found within either intervention and parents reported no change in social functioning at home (Lerner & Mikami, 2012). Facilitated and rewarded by



group leaders, the SKILLS intervention required students with ASD to work in groups on interactive lessons targeting social skills with students with ASD in different classes (Kasari et al., 2016). The SKILLS intervention was compared to the ENGAGE intervention which targeted peer engagement. Within the ENGAGE intervention, children with ASD were paired with neuro-typical peers from the same class (Kasari et al., 2016). The neuro-typical peers, the group leaders, modeled social behaviors and were encouraged to build friendships (Kasari et al., 2016). While there was a slight increase for the ENGAGE intervention, there was a significantly bigger treatment effect for the SKILLS intervention group in the percentage of time spent engaging with peers compared to the ENGAGE group (Kasari et al., 2016). SKILLS group participants also showed a significant decrease for the time spent in isolation (Kasari et al., 2016). There were no significant changes in social network salience over time (Kasari et al., 2016).

One Level I study explored an intervention aimed to improve peer engagement and play, providing moderate strength of evidence (Wood, Fujii, Renno, & Van Dyke, 2014). The cognitive behavioral therapy program, Building Confidence, was adapted for use of children with autism spectrum disorder (Wood et al., 2014). The intervention group was compared to a treatment-as-usual control group (Wood et al., 2014). The treatment focused on teaching children friendship skills and provided social coaching prior to entering social situations (Wood et al., 2014). Significant results were found for positive interactions with peers, solitary play, and any peer interaction (Wood et al., 2014).

One Level I study and one Level III study explored different interventions aimed to improve social skills , providing moderate strength of evidence. These interventions included Children's Friendship Training (CFT) and motor-based role-play intervention. The parent-assisted CFT intervention focused on improving social skills such as conversational skills, peer entry skills, developing friendships, and host behavior on play dates among children with ASD (Frankel et al., 2010). Within the study, the CFT intervention was compared to a delayed treatment control group (DTC), where treatment was given after a 3-month period of time following completion of the CFT intervention (Frankel et al., 2010). Significant results were found for loneliness, popularity, hosting behavior on play dates, disengagement on play dates and improvement of self-control compared to the DTC group (Frankel et al., 2010). There were no significant results found for guest behavior on play dates, assertion, internalization, externalization, conflict, engaging on play dates or teacher reports (Frankel et al., 2010). The motor-based role-play intervention focused on increasing social skill use, including verbal conversation skills and body language through interpretation and communication of motor behavior related to emotions and cognitive intentions (Gutman et al., 2012). Participants in this multiple-baseline design additionally served as controls (Gutman et al., 2012). Significant results for the motor-based role play intervention were found for improving targeted nonverbal and verbal behaviors (Gutman et al., 2012).

Two Level I studies explored interventions aimed to improve joint attention, communication, and social skills, providing strong strength of evidence. These interventions included Reciprocal Imitation Training and group music therapy. Outcomes addressed consisted of joint attention initiations, eye gaze or social and emotional development. Reciprocal Imitation Training focused on teaching imitation, specifically object and gesture imitation, during social interaction (Ingersoll, 2011). Compared to the business as usual control group, the RIT intervention group had a higher frequency of joint initiations over time (Ingersoll, 2011). The participants in the RIT group also showed significantly more joint attention initiations and increased social and emotional development at post-treatment (Ingersoll, 2011). Group music therapy intervention consisted of a social skills group treatment with added music elements. Group music therapy and a social skills group were compared (LaGasse, 2014). Significant effects were found in eye gaze towards persons and joint attention with peers (LaGasse, 2014). No significant effects were found on communication with another child and response to communication (LaGasse, 2014).

One Level I study explored an intervention called Seaver-NETT (nonverbal communication, emotion recognition, and theory of mind training) that aimed to improve nonverbal communication and social skills such as empathetic responding, providing moderate strength of evidence (Soorya et al., 2015). NETT is composed of a social skills curriculum for children with ASD ages 4-12 years that uses a cognitive behavioral therapy approach to teach targeted social skills (Soorya et al., 2015). This study found a large and significant improvement in areas of nonverbal communication, empathetic responding, and social relations when compared to the control group which indicates positive results for use of this intervention to target social skills in children with ASD.

One Level II study explored the intervention Project Improving Parents As Communication Teachers (ImPACT) in a therapist-implemented format with low intensity that aimed to improve social communication skills, providing moderate strength of evidence (Ingersoll, Wainer, Berger, & Walton, 2017). This study used child-directed activities with therapist facilitation of engagement, and therapists taught new play and language skills while also encouraging the child to initiate interactions (Ingersoll et al., 2017). This study found a medium to strong effect on both social engagement and language targets, medium effects on play targets, and a significant increase in expressive language (Ingersoll et al., 2017).

One Level I study explored the intervention Milton & Ethel Harris Research Initiative treatment program (MEHRIT) that aimed to improve communication and joint attention, providing moderate strength of evidence (Casenhiser, Shanker, & Stieben, 2011). Outcomes addressed by MEHRIT consisted of receptive and expressive language skills and initiation of joint attention. MEHRIT is a Developmental Individual Relationships-based (DIR) intervention based off of the Developmental Social Pragmatic (DSP) model that focuses on social interaction and communication. MEHRIT additionally emphasizes caregiver involve-

ment, co-regulation and sensory-motor support throughout intervention implementation (Casenhiser et al., 2011). MEHRIT utilized various DIR interventions and treatments such as the DIR Floortime program. In comparison to a community treatment group, the MEHRIT program showed significantly more improvement in overall social interaction and joint attention initiations (Casenhiser et al., 2011).

School-Based Interventions

Four studies examined how specific targeted school-based interventions can help children with ASD in outcomes such as peer engagement, play, social skills, and communication.

One Level I study compared the implementation of a Classroom Social Communication, Emotional Regulation, and Transactional Support Intervention, also known as Classroom SCERTS Intervention (CSI) to Autism Training Modules (ATM) conditions, providing moderate strength of evidence. These school-based interventions focused on outcomes such as peer engagement, social skills, and communication (Morgan et al., 2018). Within the CSI intervention, the classroom teachers were trained on how to implement this with the primary goal of improving social communication (Morgan et al., 2018). Within the ATM conditions, the classroom teachers were provided with these training modules, but were not trained on them nor required to use them (Morgan et al., 2018). The CSI intervention group had a significant increase in social interaction, social skills, and communication (Morgan et al., 2018). There were no significant differences between the intervention groups on socialization or change in receptive language (Morgan et al., 2018).

One Level I study evaluated peer engagement through playground observation called Remaking Recess which provides moderate strength of evidence (Kretzmann, Shih, & Kasari, 2015). Coaching and consultation was provided for adult paraprofessionals regarding modeling strategies and identification of children who are unengaged with peers and how to facilitate interactions (Kretzmann, Shih, & Kasari, 2015). The intervention group was compared to a waitlist control group, who received the intervention after the intervention group (Kretzmann, Shih, & Kasari, 2015). There was a significant difference in the amount of peer engagement on the playground for the intervention group in comparison to the waitlist group (Kretzmann, Shih, & Kasari, 2015).

One Level II study explored a practice-based model intervention that used research-based evidence and adapted it for feasibility in the school setting in order to improve social skills comparable to an intervention tested by a research program (Locke, Rotheram-Fuller, Harker, Kasari, & Mandell, 2019). This study provides low strength of evidence based on study design. The practice-based model used adult facilitation on the playground with in-vivo skills coaching and peer mediation (Locke et al., 2019). This study found significance in a shorter time spent in isolation and number of successful initiations in comparison to a research-based model (Locke et al., 2019).

One Level I study explored different interventions aimed to improve social communication and play skills provides moderate strength of evidence. This intervention included the ASAP Intervention for preschoolers with ASD, which focused on improving social-communication and play skills (Boyd et al., 2018). Within the study, the ASAP intervention was compared to the business and usual control condition intervention which resumed everyday class routine as normal and received no coaching from the master ASAP coach (Boyd et al., 2018). There were no significant results found for this study in social communication, play outcomes, or challenging behavior (Boyd et al., 2018). There were non-significant increases found for classroom engagement (Boyd et al., 2018).

Animal-Assisted Interventions

Two Level I studies examined how animal-assisted interventions can help children with ASD in outcomes such as social skills and communication.

One Level I study examined how interactive sessions with a guinea pig at school could help children with ASD improve in social functioning while being compared to a waitlist control group (O'Haire, McKenzie, McCune, Slaughter, 2014). An additional Level I study explored the effects of Equine Assisted Therapy on social communication for children with ASD (Gabriels et al., 2015). These studies provide strong strength of evidence. The guinea pig intervention consisted of teaching the children how to care for the animal, and also how to interact with the animal. The intervention also included a peer component where normally developing classmates were also invited to take part in caring for the animal.

Teachers and parents noticed a significant increase in social behaviors and social skills for the intervention participants, and also noticed a significant decrease in social withdrawal behaviors (O'Haire et al., 2014). For the therapeutic horseback riding intervention, the sessions were instructed by a certified Professional Association of Therapeutic Horsemanship (PATH) instructor and focused on therapeutic riding skills and horsemanship skills while following a picture schedule and a set routine for every riding session. The intervention group was compared to a barn activity control group, which utilized a stuffed horse rather than a live horse. Significant improvements for social communication were shown within the intervention group (Gabriels et al., 2015).

Peer-mediated Interventions

Six studies examined the effect of peer-mediated interventions on social skills, communication and peer engagement in children with ASD.

Three of the six peer-mediated studies were Level I studies implementing SENSE Theatre intervention and provide strong strength of evidence. SENSE Theatre is a peer-mediated theatre intervention aimed to improve social skills in children through the use of different activities including theatre-related games, role play, and improv, as well as rehearsal and performance of 2 productions at the end of treatment (Corbett et al., 2016). Participants in these studies were paired with a typically developing peer throughout the duration of treatment and were also instructed to watch videos of peers performing desired social behaviors (Corbett et al., 2016; Corbett et al., 2019; Corbett, Blain, Ioannou, & Balser, 2017). Treatment groups were compared to waitlist control groups, who received treatment as usual throughout the duration of the study. Significant effects were found for social communication, social skills, and group play, with significant effects remaining in communication at 2-month follow-up (Corbett et al., 2016). No significant effect was found for social skills at 2-month follow-up (Corbett et al., 2016). Significant effects were found for solicited cooperative play, and verbal interactions during solicited play, with an increase in the experimental group and a decrease in the control (Corbett et al., 2019). No significant effects were found for unsolicited cooperative play (Corbett et al., 2019). In addition to social skills-related outcomes, one study aimed to assess the effects of SENSE Theatre on levels of trait and state anxiety (Corbett et al., 2017). Though anxiety does not fall within the current scope of this rapid systematic review, it was found that group play and trait anxiety were negatively correlated (Corbett et al., 2017). Though group play and trait anxiety were negatively correlated, a mediational analysis was run and found no mediational effects between changes in play and changes in trait anxiety (Corbett et al., 2017). This suggests that SENSE Theatre did not have an effect on group play, but it did have an effect on anxiety, and it is known that lower levels of anxiety generally indicate a higher level of play (Corbett et al., 2017).

Two Level I studies targeted peer engagement through the use of peer-mediated interventions provide strong strength of evidence. These interventions included a peer network (Kamps et al., 2015) and child-directed conditions versus peer-mediated conditions (Kasari, Rotheram-Fuller, Locke, & Gulsrud, 2012). The peer network intervention involved grouping students with ASD in social groups with neuro-typical peers who were trained to participate in this intervention (Kamps et al., 2015). Both peer mediation and direct instruction were used in this group (Kamps et al., 2015). The peer network group was compared to the control group who experienced "business as usual" conditions (Kamps et al., 2015). There were significant differences for the intervention group in invitations to peers during non-treatment social probes and natural interactions with peers during generalization probes (Kamps et al., 2015). There were also significant increases in total communicative acts the longer the participants were in the intervention (Kamps et al., 2015). As social competencies go, the intervention group improved much more overtime than the control group (Kamps et al., 2015). There was no significant difference in responses over time during generalization probes (Kamps et al., 2015). The second study examined child-directed condition and peer-mediated condition that focused on improvement of peer engagement in children with high-functioning autism (Kasari et al., 2012). The peer-mediated condition involved educating typically developing peers how to interact with children with ASD, while the child-directed condition used direct training of social skills(Kasari et al., 2012). This study found significant improvements for the peer-mediated condition in social skills rating per a teacher-reported measure and also in joint engagement on the playground (Kasari et al., 2012).

One Level I study explored different interventions aimed to improve peer interactions and quality of play for students with ASD at recess and provides moderate strength of evidence (Brock, Dueker, & Barczak, 2018). Within the study, the Peer-Mediated Pivotal Response Training intervention was compared to the control intervention which received no training and continued with recess as usual (Brock et al., 2018). There were significant results found for total interactions, interactions from the target student toward peers, and interactions from peers toward the target student (Brock et al., 2018). There were no significant results found for quality of play with regard to appropriate peer play, solitary play and no play, although all having large effect sizes (Brock et al., 2018).

JASPER Interventions

Four studies examined how specific targeted JASPER (joint attention, spontaneous play engagement, and regulation) interventions or a variation of JASPER can help children and adolescents with ASD in outcomes such as joint attention, play, peer engagement, and communication.

Two Level I studies explored the implementation of Joint Attention, Symbolic Play Engagement, and Regulation (JASPER) compared to a control group, providing strong strength of evidence. JASPER group participants were pulled from the classroom to work on joint attention, play, and communication in a play-based treatment (Goods, Ishijima, Chang, & Kasari, 2012; Chang, Shire, Shih, Gelfand, & Kasari, 2016). At the exit of the treatment, both studies had results of the JASPER intervention group showing significant increases in play types, spontaneous play, and initiating more requesting gestures (Goods et al., 2012; Chang et al., 2016). The JASPER intervention also showed a significant decrease of percentage of time the participants spent unengaged (Goods et al., 2012). There was no significant change in requesting or spontaneous joint attention for one study, (Goods et al., 2012), but the second study did show a significant increase in requesting communication (Change et al., 2016).

One Level I study explored different interventions aimed to increase communication outcomes among three adaptive interventions in school-aged children with ASD who are minimally verbal, providing moderate strength of evidence (Almirall et al., 2016). Within the study the JASP + Enhanced milieu teaching + Speech-generating device (JASP+EMT+SGD) intervention was compared to the JASP+EMT intervention which is an intervention focused on joint attention and enhanced milieu teaching with no speech generating device (Almirall et al., 2016). There were significant results found for changes in spontaneous communicative utterances and initiating joint attention (Almirall et al., 2016). There were no significant results found for number of direct word utterances, total number of comments, spontaneous requests, initiating behavior regulation or unique play acts (Almirall et al., 2016).

One Level I study evaluated various implementations of symbolic play, joint attention, peer engagement and communication through evaluating symbolic play then joint attention (JA-SP) in comparison to joint attention then symbolic play, providing moderate strength of evidence (Wong, 2013). These interventions were then compared to a wait-list control group, who were later randomized to either intervention (Wong, 2013). No matter the intervention order, significant results were shown for the intervention groups for increase in joint engagement, joint attention and play (Wong, 2013). Study results suggest simply teaching children with ASD about skills needed for socializing is more important than the specific type of intervention implemented (Wong, 2013).

PEERS Interventions

Four studies examined how interventions involving Program for the Education and Enrichment of Relational Skills (PEERS) can help children with ASD in outcomes such as communication, social skills, and peer engagement.

One Level I study examined the effectiveness of PEERS on improving social skills, providing moderate strength of evidence (Schohl et al., 2014). In this study, adolescents and parents participated in group sessions where friendship and social etiquette rules were taught through the use of homework, didactic lessons, and role-play (Schohl et al., 2014). This study found no significant results in teacher- or parent-reported measures for social skills, but there were significant results for invited and hosted get-togethers (Schohl et al., 2014). This study had missing teacher data and lacked diversity of participants, reducing generalizability to a population that is more diverse (Schohl et al., 2014).

Two Level II studies explored different interventions aimed to improve communication, social skills and peer engagement. Both interventions shared the same title, UCLA PEERS for Young Adults, providing moderate strength of evidence (Laugeson, Gantman, Kapp, Orenski, & Ellingsen, 2015; Gantman, Kapp, Orenski, & Laugeson, 2012). The first UCLA PEERS for Young Adults Program intervention focused on making and keeping friends and managing peer conflict and rejection (Laugeson et al., 2015). Within the study the PEERS intervention was compared to the delayed treatment control intervention which received the same treatment, but after the completion of the treatment condition (Laugeson et al., 2015). There were significant results found for social skills, ASD symptoms related to social responsiveness and frequency of social engagement (Laugeson et al., 2015). There were no significant results found for hosted get togethers, invited get togethers, social communication, social cognition, social awareness, responsibility or self-control (Laugeson et al., 2015). The second UCLA PEERS for Young Adults Program intervention focused on communication, peer engagement and social skills (Gantman et al., 2012). This intervention followed the same format, comparing the PEERS intervention with a delayed treatment control intervention (Gantman et al., 2012). There were significant improvements in overall social skills (knowledge of social skills, empathizing, cooperation, etc.), peer engagement (hosted and invited get-togethers), and social communication (Gantman et al., 2012).

One Level I study explored the traditional PEERS intervention, but also included a PEERS with peers group exploring how peer interaction could have an impact on the traditional PEERS intervention, providing moderate strength of evidence (Matthews et al., 2018). The study included a traditional PEERS group with parent assisted social skills intervention to help increase social skills in adolescents with ASD. The study also included an additional intervention group called PEERS with Peers that used the same curriculum as the PEERS group but also included typically developing peer mentors that received training in how to participate in activities (Matthews et al., 2018). Parents reported a large and significant improvement in participants' social skills in the PEERS with Peers group, but no significant improvement in the PEERS group when compared to the control group. The traditional PEERS group did have a large and significant result in improvement in hosted get togethers when compared to the control group, meaning both intervention groups had different result outcomes when compared to the control group.

Other Outcomes

Several outcomes were found that did not fall within the common themes of this rapid systematic review, such as negative social behaviors and peer preference. Refer to Appendix A - Table 1 for these outlying results.

Discussion

This rapid systematic review evaluated 30 studies and provides evidence to suggest that children and adolescents would benefit from interventions targeted towards improving social engagement skills. Outcomes specifically addressed throughout this rapid systematic review include communication, joint attention, peer engagement, social skills and play. Appraised studies suggest that interventions targeting social behaviors improved social engagement in children and adolescents with ASD. Appraised studies encompassed a variety of settings, including home, school, and community, suggesting these interventions are transferable to the ASD population within the realm of occupational therapy.

The interventions analyzed fall within the scope of occupational therapy practice. This suggests that occupational therapists can adapt these interventions to improve overall performance and participation in the occupation of social participation. Of 30 studies reviewed within this rapid systematic review, 26 were identified as Level I randomized controlled trials, indicating a high level of strong supporting evidence. However, not all interventions demonstrated significant improvements in overall social engagement in children and adolescents.

There were multiple interventions that were reviewed and yielded significant and positive results that could be beneficial for occupational therapists to use and implement into working with kids with ASD to improve social engagement. The PEERS curriculum yielded significant and positive results in four studies, suggesting that occupational therapists could pull components from this intervention to help improve social engagement in adolescents and young adults (Gantman et al., 2012;

Laugeson et al, 2015; Matthews et al., 2018; Schohl et al., 2014).Three studies implementing SENSE Theatre provided evidence to suggest that this intervention may be effective in treating social engagement deficits in children with ASD (Corbett et al., 2016; Corbett et al., 2019; Corbett, Blain, Ioannou, & Balser, 2017) Peer-mediated interventions have shown significant results in improving social engagement and can be utilized by occupational therapists in the school-based setting (Brock et al., 2018; Kamps et al., 2015; Kasari et al., 2012). The Remaking Recess intervention provided significant results for improving social engagement with peers on the playground (Kretzmann et al., 2015). Occupational therapists should continue to be involved in the school-based setting, not only in the therapy room or classroom, but also on the playground or at recess to facilitate peer interaction for children and adolescents with ASD.

However, a few interventions within this review did not yield significant results and should not be highly considered by occupational therapists to use as interventions. Sociodramatic Affective Relational Intervention (SDARI) and Skillstreaming did not have significant or positive results indicating an improvement in social functioning for children with ASD (Lerner & Mikami, 2012). The pilot study regarding Joint Attention, Symbolic Play Engagement, and Regulation (JASPER) showed limited progress for the intervention group and very mixed results in terms of improving social engagement (Goods et al., 2012). These interventions with poor results do not hold strong evidence to be used by an occupational therapist to help children and adolescents with social engagement. Refer to Appendix A for specific results and details on interventions reviewed.

Limitations

Though there was a high level of evidence suggesting that a majority of these interventions have the capability of improving social engagement in children and adolescents with ASD, some limitations within the studies were noted. Common limitations throughout this rapid systematic review include small sample size, poor generalizability, contamination bias, other potential biases, short duration of interventions, and/or lack of inclusivity for all levels of function within ASD.

It is important to note that over half of the studies that we reviewed consisted of a small sample size, which indicates a decrease in power. Further research should be carried out in this field with larger sample sizes in order to avoid skewing data. When a study's sample size is limited, this could infer that the sample is not diverse enough. If a sample is not representative of a diverse population then it cannot be generalizable to other populations. This is a major limitation of the examined evidence as we hope to generalize these findings to the realm of occupational therapy.

Many of these studies incorporated a contamination bias due to the fact that the researchers, participants, caregivers, or implementers were not blind to who was in the intervention or control group. Although with certain interventions it is not possible to blind participants necessarily, it is still important to conduct blind studies when possible in order to prevent bias and have accurate results.

Other biases that limit these findings include measurement bias, treatment contamination, parental bias, and sampling bias. Bias can lead to incorrect interpretation of results and research findings.

Multiple studies that we reviewed were limited in terms of implementing the interventions for a short period of time. These findings may have been more significant if the researchers were able to continue with the intervention during post-treatment follow-ups. While certain studies did incorporate some type of follow-up with participants, it would be even more beneficial to have extended follow up periods to see the long-term efficacy results on participants.

A final theme in limitations of these studies include solely focusing on a specific level of functioning in children with ASD. Some studies included only high-functioning participants, while others chose to include minimally verbal participants. This is important to note as the findings from these studies may not be generalizable to the entire ASD population.

The methods of conducting this rapid systematic review were potentially limited. Following the full text screening, 36 articles remained for potential review. Articles were hand-picked for review, potentially introducing bias. Search was limited to only three databases rather than being all encompassing and was intended to be limited to randomized control trials. Relevant studies could have been missed due to selected search terms. Studies primarily focused on parent-child

intervention were excluded, potentially excluding a large contributing factor to development of social engagement within children and adolescents with ASD. However, the review was primarily focused on social interaction regarding peers. Additionally, this review included studies ranging from ages 3 through 24, potentially limiting the ability to generalize to a more specific age group.

Finally, research of occupational therapists implementing interventions for children and adolescents with ASD regarding social engagement is limited. In addition, social engagement encompasses various social skills, creating the limitation of evaluating many different interventions. For these reasons, this rapid systematic review has a wide variety of interventions creating difficulty with cohesiveness throughout. This limitation made it difficult to review previous research on these interventions and narrow results to most effective evidence for occupational therapists to consider.

Implications for Research and Practice in Occupational Therapy

Occupational therapists can adapt these interventions and implement them with children and adolescents diagnosed with autism spectrum disorder (ASD) to address social engagement, communication, joint attention, participation in play, peer engagement, and social skills affecting development and quality of life. Additional research and occupational therapy practice recommendations include the following:

- Social participation is an important occupation essential to one's ability to participate in an enriching and meaningful life. Improving social participation in children and adolescents with autism spectrum disorder is imperative for overall health. Occupational therapy-based research in this field should aim to improve the quality of life for children and adolescents with ASD.
- Occupational therapists should continue to carry out research that targets increasing social engagement in children and adolescents with ASD in order to determine which interventions are most easily adapted to the realm of occupational therapy.
- Further research should be reproduced on a larger scale with bigger sample sizes in order to increase the strength and validity of the studies.
- Future research in the realm of occupational therapy should be consistent in focusing on client-centered and family-centered care. This upholds the profession's holistic and client-focused approach.
- Research should be conducted in the child's natural context such as the school or home in addition to the clinic to promote generalization and transfer of skills.
- It is important to note that current research findings are not specific to the practice or profession of occupational therapy, however these findings can be adapted by occupational therapists.

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*Indicates studies that were reviewed for this article.

Appendix A

Table 1. Evidence Table for Social Engagement in Children and Adolescents with Autism Spectrum Disorder

Author/Yr	Level of Evidence/Study Design/Participants/Inclusion Criteria	Intervention and Control	Outcome Measures	Results
Almirall et al. (2016) https://doi.org/10.1080/15374416.2016.1138407	Level I - RCT (Sequential, Multiple-Assignment Randomized trial) *N* = 61 83% male: ● Treatment group: 79% ● Control group: 87% 17% female: ● Treatment group: 21% ● Control group: 18% Age: 5-8 yr Intervention group, *n* = 30 Inclusion Criteria: ● ASD diagnosis ● Between 5-8 yr old ● Minimally verbal, with fewer than 20 spontaneous novel words in a 20-min natural language sample ● At least 2 yr of previous intervention ● At least 24 mo developmentally	***Intervention:* JASP+EMT Condition** All children were given a developmental behavioral communication intervention known as JASP, including the following elements: joint attention, symbolic play, and engagement and regulation. This was given in conjunction with enhanced milieu teaching (EMT). Children who were assigned initially to this condition were given 2-hr long sessions per wk for 12 consecutive wks. The JASP intervention concentrates on social-communication skills by doing the following: A) creating opportunities for learning with therapists and caregivers involved; B) responding to the child's actions and interests; C) modeling; D) expanding language, play and engagement. The EMT intervention concentrates on spoken language skill gains using modeling of target language, behavioral prompts and responsive interaction strategies. Both the JASP and EMT intervention skills are known to be foretelling of later spoken utterances in children with ASD. ***Intervention:* JASP+EMT+SGD Condition** Children who were assigned to this condition received 2-hr sessions per wk for 12 consecutive wks, similar to the previous condition	● Demographic Questionnaire- baseline ● Leiter International Performance Scale-Revised (Leiter-R)- baseline ● Autism Diagnostic Observation Schedule (ADOS)- baseline ● Naturalistic Language Sample (NLS)- baseline, end of wks 12, 24, 36 ○ 2 verbal outcomes were taken from this measure: TSCU & NDWR ● Early Social Communication Scales (ESCS)- baseline, end of wks 12, 24, 36 ○ 2 non-linguistic outcomes were taken from this measure: IJA, IBR ● Structured Play Assessment (SPA)- baseline, end of wks 12, 24, 36 ○ 1 non-linguistic outcome was taken from this measure: UPA	Between-group differences in change of outcomes were examined at baseline and also at wk 36. The researchers hypothesized that the JASP+EMT+SGD condition would lead to the best results. The verbal outcomes that were examined were new words and spontaneous communicative utterances. There were also 3 nonverbal communication outcomes that were examined including: initiating joint attention, behavior regulation and play. The results showed that there was significant ($p<0.05$) between group differences in initiating joint attention related to the (no SGD, no SGD) intervention, with average AUC effect sizes (0.43; 0.67). It is of importance to note that children that are school-aged and have a diagnosis of ASD who are minimally verbal make statistically significant improvements in communication outcomes when they were assigned to the JASP+EMT+SGD intervention. When comparing the (no SGD,

		but with an added speech-generating device (SGD) component. The device was an iPad with an AAC app that used picture symbols representing activity-related words. During the sessions, the therapist was instructed to model language using the iPad at least half of the time. Children were not required to use the device, but the therapist was required to grow the language they used (verbal or nonverbal) using the device at least 80% of the time. ***Control:*** There was no control group.		SGD) group to the (SGD, SGD) group, the (SGD, SGD) led to improved spoken utterances with an AUC effect size of (0.58). The researchers conducted a separate analysis of therapist and child interactions, and it was found that children in the (SGD, SGD) intervention had greater improvement in the amount of time they were engaged in mutual communication. The results possibly suggest that using a speech-generating device within a natural developmental behavioral intervention may produce sustained, repeated mutual communication interactions, that will ultimately lead to increases in communication skills, verbally and non-verbally.
Boyd et al. (2018) https://doi.org/10.1007/s10803-018-3584-z	Level I - CRC (Cluster RCT) *N* = 161 % male: ● Treatment group: 88.89% ● Control group: 81.82% ● Treatment group teaching team: 0% ● Control group teaching team: 2.44% % female: ● Treatment group: 11.11% ● Control group: 18.18% ● Treatment group teaching team: 100% ● Control group teaching team:	***Intervention:*** **ASAP** Classrooms were randomly assigned to the ASAP or business-as-usual (BAU) control condition in blocks of four. Values of 0 or 1 were randomly given to each classroom, and then were sorted. The lower two were assigned to the ASAP intervention and the higher two were assigned to the BAU control condition. After the groups got their assignments, classroom teams were given two trainings throughout the assigned school yr, given by master ASAP coaches. The first training was an introduction with case examples for the teams to discuss and work through within a 4-6-hr period. The second	● Social Communication (based on observational coding using researcher-developed coding systems from video recordings based on repeated ADOS-G administrations) ● Play (video coded from administrations of the Structured Play Assessment (SPA)) ● Caregiver-Teacher Rating Form (CTRF): ● Engagement (based on direct observation of children during their normal classroom routines	There was little evidence of change over time or treatment differences for play ($p>0.05$). There was also no evidence of time or treatment effects for social communication ($p>0.05$). Additionally, intervention effects on the three communication functions and four play levels had no statistically significant results found. Results of child engagement at pre- and post-test indicated significant change for 3 measures: A) unengaged (UE); B) some engagement (SOE); C) overall

	97.56% Age: 3-5 yr Intervention group, *n* = 85 ● Children that completed, *n* = 82 Inclusion Criteria: ● Between the ages of 3-5 yr old ● Enrolled in a public preschool classroom ● Had an educational classification of developmental delay or autism and/or clinical diagnosis that placed them on the autism spectrum ● Met diagnostic criteria on the Autism Diagnostic Observation Schedule-Generic ● Were enrolled in the classroom by October 31st of each yr in order to receive at least 6 mo of ASAP or BAU exposure	training was for discussing implementation approaches within a 2-4-hr period. ASAP coaches were available throughout the school yr for guidance and help, as well as to visit the classroom to ensure consistency on the implementation strategies being used. Monthly meetings occurred to address child progress and discuss implementation. Blinded raters were put into the classroom to oversee what occurred, completing the Professional Development in Autism Program Assessment (PDA), while the teachers completed the Classroom Practice Inventory (CPI) to report on practices in their classroom. ***Control:*** **Business-as-usual Condition** Classroom teams in this condition resumed with their everyday practice and received no additional training or coaching from the master ASAP coach. At the end of the school yr, they were offered the ASAP manuals and training. Blinded raters were also placed in these classrooms, and the rater and teacher completed the same measures as the ASAP intervention.	and then these were blindly coded) ● Maslach Burnout Inventory-Educators Survey (MBI-ES) ● Professional Development in Autism Program Assessment (PDA) ● Classroom Practice Inventory (CPI) ● Intervention Rating Profile (IRP)	engagement (Over-all). Treated children in the ASAP intervention decreased significantly more on the UE measure than untreated children did (d=-0.56). The treated children also increased on both SOE (d=0.50) and on overall engagement (d=0.49). The other engagement measures were not statistically significant, as well as the subscales on the CTRF having no statistically significant results (all p>0.05). Researchers found no statistically significant treatment effects for outcome measures of social communication on play or challenging behavior. However, there were statistically significant results found for group by time interactions for child engagement showing endorsement for the ASAP intervention. The researchers proposed that by the end of the school yr, children who were exposed to the ASAP intervention would be significantly less likely to be unengaged, and more likely to be engaged in an appropriate state. Blinded observers additionally rated these children to be more engaged than those in the BAU control condition.

Brock, Dueker, & Barczak (2018) https://doi.org/10.1007/s10803-017-3435-3	Level 1- RCT (Pilot Feasibility Study) *N* = 41 ● *N* = 11 students with an educational diagnosis of ASD ● *N* = 19 peers without developmental disability who shared the same recess ● *N* = 11 adults who supervised recess % male: ● Treatment group: 83.33% male ● Control group: 100% male ● Trained peers: 42.1% ● Adult facilitators in Control: 0% ● Adult facilitators in treatment: 0% % female: ● Treatment group: 16.7% female ● Control group: 0% female ● Trained peers: 57.9% ● Adult facilitators in Control: 100% ● Adult facilitators in Treatment: 100% Age: 8-12 yr Intervention Group, *n* = 6 Inclusion Criteria: ● Educational diagnosis of ASD who were not frequently interacting with peers at recess (per teacher report) ● Additional inclusion criteria was not listed in the article.	***Intervention:*** **Peer-Mediated PRT Experimental Condition** For the experimental condition, there was a 1-hr training session for the facilitators in this condition to address identifying, training and supporting peers every day during recess time at school. Facilitators had to identify peers by asking students with ASD about peers of whom they liked, and then approached these students who positively interacted with this child previously. Following this, there was a 45-minute meeting with the selected peers, where the facilitator built rapport with the peer, described the meaning behind the intervention, provided necessary background information on the student with ASD and shared the 5 strategies to engage the student, explaining that they would have to use these strategies at recess, and the facilitator would always be nearby to provide support. The 5 strategies were founded in PRT, and included: A) getting the child to look at you; B) asking them to do something with you; C) demonstrating and discussing how to play; D) complimenting them; E) playing at the same time or taking turns if this doesn't happen. These strategies were discussed in the 45-minute meeting and were modeled by the facilitator in role-play activities with the peer, while giving feedback on how to improve. After the initial training, the facilitator provided necessary support during recess if necessary, for the peer, which was sustained for a minimum of 5 wks.	● Recess Observations (live observation) ● Social Validity Questionnaire developed by Asmus et al. (2017)	Children with ASD who received the intervention significantly increased interactions with their peers. There were statistically significant results and intervention effects for total interactions (d=1.13), interaction from student to peer (d=1.01) as well as interactions from peers towards the student (d=0.89). Improvement in the quality of play was large, however it was not statistically significant. Participants gave positive feedback about the usefulness of this intervention and its effects. Quality of play was not statistically significant, but the effect sizes were strong. There was an increase in appropriate peer play (d=0.89), decrease in inappropriate play (d=-1.22), decrease in appropriate solitary play (d=-0.29), and finally a decrease in no play at all (d=-0.72). The students who were in the experimental group were asked questions about their time in recess, and they reported liking to go to recess, considered their peer to be their friend and that they would continue playing with their peer. School staff can practically implement peer mediated PRT during recess time at school. It is an effective way to heighten interactions between children

		Control: The control condition did not receive any training or direction, including no direction to select peers. Participants were only told to observe recess like normal.		with ASD and typically developing peers. Effects for interactions were statistically significant and both children with ASD and typically developing peers reported positive comments about the intervention itself. The findings of this study are consistent with previous studies, in that peer mediated PRT increases social interaction between children with ASD and typically developing peers during recess time.
Casenhiser, Shanker, & Stieben (2011) https://doi.org/10.1177/1362361311422052	Level I - RCT *N* = 51 Male:female not reported *M* age Intervention = 42.52 mo *M* age Control = 46.38 mo Intervention group, *n* = 25 Inclusion Criteria: ● Previously diagnosed with ASD and confirmed using ADOS and Autism Diagnostic Interview. Exclusion criteria: ● Neurological or developmental diagnoses other than ASD ● Families who couldn't meet time requirements of the study	***Intervention:*** **MEHRI treatment program (MEHRIT):** DSP modeled, DIR-based intervention at the Milton & Ethel Harris Research Initiative. Treatment was implemented by occupational therapists or speech-language pathologists who received intensive training (3 wks) for DIR. Treatment was 2 hrs/wk. 15/20-minute breaks were allotted for children during sessions. These sessions were used to discuss therapy with caregivers. Primary role of therapists was to determine the child's strengths and challenges regarding speech, communication, sensory, cognitive and motor abilities and then to communicate with the parents to teach them about these strengths and challenges in order to create strategies for the child and family to help the child improve in these areas. Caregivers were also required to meet with the therapists every 8 wks in order to review videotaped play	● Child Behavior Rating Scale (mCBRS) ○ Rate children's interactions with their caregivers. ○ Developmental capacities related to social interaction ○ Attention to interactive activity ○ Joint attention ○ Activity initiation ● Preschool Language Scale (PLS) ○ Receptive and expressive language skills ● Comprehensive Assessment of Spoken Language (CASL) ○ Receptive and expressive language skills ● Parent fidelity to treatment	mCBRS: significant improvements from pre to post measures ($F(5,45)=12.532$, $p<0.001$) and the changes were significant by group ($F(4,45)=4.408$, $p=0.002$). MEHRIT group's improvements were significantly greater than the control group in all aspects of the mCBRS except compliance. Initiation of Joint Attention and Involvement portions of the mCBRS were strong indicators of language change/improvement on PLS/CASL. PLS: both intervention ($p=0.038$) and control group ($p<0.001$) improved significantly.

		sessions of caregivers with their children and the progress their child was making. Treatment lasted for 12 mo and assessments were completed at the beginning and end of that time frame. ***Control:*** **Community treatment** Families in the control group were told to seek treatment while waiting for treatment through the study if they were able to. All children in control group received less than 15 hrs of treatment and on average received 3.9 hrs of treatment while waiting for study treatment. ● Speech therapy ● Occupational therapy ● Social skills group ● Specialized part-time day care ● Alternative treatments **There was not a no treatment control group.**		
Chang, Shire, Shih, Gelfand, & Kasari (2016) https://dx.doi.org/10.1007/s10803-016-2752-2	Level I - RCT *N* = 66 89% male 11% female *M* age = 4.2 yr Intervention group, *n* = 38 Inclusion Criteria: ● Diagnosis of ASD ● Between 3-5 yr of age ● Enrolled in 1 of 6 autism specific preschool programs as part of a large urban public-	***Intervention:*** **Joint Attention Symbolic Play Engagement and Regulation (JASPER)** JASPER was implemented in a preschool classroom setting. Primary adaptations in classrooms included grouping children based on developmental play level (when possible), appropriate toy selection for the small groups, environmental seating arrangements that promoted social interactions, and strategies to increase awareness and limitations of peer to peer interactions. Program leaders used more environmental modifications and were less directive verbally.	● Child Measures: ○ Early Social Communication Scales (ESCS) ○ Structured Play Assessment (SPA)	There was a significant increase in IJA language (children's comments and social greetings) when compared to the waitlist group (p =0.039) This outcome was maintained at the follow up point (p=0.003). There was a significant increase in IBR language (children's request to access material) when compared to the waitlist group (p= 0.006). This outcome was not maintained at the follow up point.

	school district	***Control:*** Control group was a waitlist group in which children would receive the JASPER intervention 4 mo later.		There was a significant improvement in simple and functional play types when compared to the waitlist group (*p*=0.010). This outcome was maintained at the follow up point ($p < 0.001$). There was no change in symbolic play. imp
Corbett, Blain, Ioannou, & Balser (2017) https://doi.org/10.1177/1362361316643623	Level I - RCT *N* = 30 80% male 20% female *M* age = EXP: 11.27 yr WLC: 10.74 yr Intervention group, *n* =17 Inclusion Criteria: ● ASD diagnosis ● High functioning ● IQ >70	***Intervention:*** **SENSE Theatre** The intervention group (WLC) received 10 sessions of SENSE Theatre over 10 wks. Sessions lasted 4 hrs each. SENSE Theatre consisted of games, role-playing, and exercises, as well as practicing for their upcoming performance at the end of the treatment. Typically developing peers were trained and paired with a child with ASD. Participants were also instructed to view videos of peers participating in desired behaviors. ***Control:*** The control (WLC) did not receive the SENSE theatre treatment until after the study's completion.	● STAI-C ● PIP (peer interaction paradigm)	**Significant group effects**: Trait anxiety: p=.005 **No significant group effects**: State anxiety: p=.86 **No significant mediational effects:** Changes in play on changes in trait anxiety: (B=-.032; CI=-3.35 to 2.11) **Negative Correlation:** Trait anxiety and group play: (r=-.362, p=.05) These results extend previous findings regarding SENSE theatre intervention (Corbett et al., 2016). Treatment effects were found in changes in trait anxiety. This shows that the children's anxiety in the experimental group was associated with changes in group play.
Corbett et al. (2019) https://doi.org/10.1080/87565641.2019.1676	Level I - RCT *N = 77* 77% male 23% female	***Intervention:*** **SENSE Theatre** The intervention group received treatment in the form of SENSE Theatre. SENSE Theater incorporates theatre games, role-play, and rehearsal of assigned characters for a performance at the end	● PIP (peer interaction paradigm)	Cooperative play- solicited: p=.02, d=.58 Cooperative play -unsolicited play: p=.12, d=.48

244	*M* age = 11.12 yr (EXP) 10.58 yr (WLC) Intervention group, *n* = 44 Inclusion Criteria ● Diagnosis of ASD ● IQ≥ 70 Exclusion Criteria ● Display of aggression within the last 6 mo	of treatment. Participants were paired with typically developing peer-actors throughout the duration of treatment. ***Control:*** The control group did not receive SENSE Theatre until after final completion of the study. Participants received treatment as usual throughout the duration of the study.		Verbal interactions during solicited play: Increase in EXP group: 12.39% Decrease in WLC group: 13.05 % P=.04, d=.47 Participants in the experimental group engaged in more solicited cooperative play post-intervention. There were no treatment effects for unsolicited cooperative play. Verbal interactions during cooperative, solicited play increased in the EXP group, and decreased in the WLC.
Corbett et al. (2016) https://doi.org/10.1007/s10803-015-2600-9	Level I - RCT *N* = 30 80% male 20% female *M* age = 11.27 yr (EXP) 10.27 yr (WLC) Intervention group, *n* = 17 Inclusion Criteria: ● Diagnosis of ASD ● IQ ≥ 70	***Intervention:*** **SENSE Theatre** 10 weekly 4-hr sessions of SENSE Theatre intervention was implemented. SENSE Theatre involved role-play, theatrical games, and rehearsal and performance in 2 plays at the end of treatment. Participants were paired with typically developing peers throughout the duration of treatment. Participants also watched videos of typically developing peers completing target behaviors. ***Control:*** Children in the control group received treatment as usual throughout the duration of the study. SENSE Theatre was implemented in the form of a summer camp after the study's completion.	● ABAS (adaptive behavior assessment system): Social Subscale ● SRS (social responsiveness scale): communication subscale ● PIP (peer interaction paradigm)	SRS Communication: p=.03, d=-.86 ABAS Social Subscale: p=.04, d=.77 Group play: p=.04, d=.77 **2-month Follow-up** SRS Communication: p=.03, d=-.82 ABAS Social Subscale: p=.13, d=.52 Treatment effects were found on all outcomes related to PICO, including SRS communication, ABAS Social subscale, and Group play. Statistically significant effects were found at follow-up for SRS communication, but not

				ABAS Social Subscale.
Frankel et al. (2010) https://doi.org/10.1007/s10803-009-0932-z	Level I - RCT *N* = 68 ● Children that completed, *n* = 57 % male: ● Treatment group: 85.7% ● Control group: 84.8% % female: ● Treatment group: 14.3% ● Control group: 15.2% Age: 2nd-5th grade (*M age*= 102.35 mo) Intervention group, *n* = 40 ● Children that completed, *n* = 26 Inclusion Criteria: ● The child satisfied ADOS-G and ADI-R criteria for an Autism Spectrum Disorder ● The child was currently attending a 2nd-5th grade regular classroom for most of the school day without a "shadow" or other closely supervising adult. ● The child was not currently prescribed any psychotropic medication ● Verbal IQ greater than 60 ● Child able to switch topics in conversation when the other person was interested in talking about something else ● Had adequate knowledge of rules in playing at least 2	***Intervention:* Children's Friendship Training Experimental Condition** After meeting the vast list of inclusion criteria, children were randomly assigned to the CFT intervention immediately for a 12-wk period or to the DTC intervention after a 12-wk delay. The randomizer assigned a number to the child of either 1 or 2, with 1 being the CFT condition and 2 being the DTC condition. Intervention was 60-minute sessions once a wk for 12 wks. Children and their caregivers were seen at the same time period, but in different locations. Each session was broken up into four segments. The first segment was 10 minutes in length and the children reported results of their homework assignments from the previous wk. In the second 20-minute segment, there was a presentation and coached behavioral role-play between the children that were present. The third 25-minute segment consisted of coached play where novel skills were practiced and critiqued. The fourth 5-minute segment consisted of parents and children being reunited to discuss the current wk's homework assignment. In these sessions, children were taught play skills, good and bad times to make friends, how to watch other children play, and rules of participation. Rejection and ways to navigate those situations were also discussed. Methods of persuasion and negotiation were taught, as well as the rules of being a good host to avoid conflict on play dates. Children were always paired after learning new skills	● The Loneliness Scale ● Piers-Harris Self-Concept Scale (PHS) ● Quality of Play Questionnaire- Parent (QPQ) ● Social Skills Rating System- Parent (SSRS) ● The Pupil Evaluation Inventory- Teacher (PEI)	There were a total of 13 analyses, with 5 being statistically significant. In the CFT group, children reported statistically significant gains on loneliness and popularity scores (both $p<0.025$) when being compared to the DTC group. There were statistically significant effects for host and disengagement (both $p<0.001$). Parents of these children stated significant improvements in the overall number of hosted play dates and decreases of disengagement on play dates compared to the DTC group. Parents of children in the CFT group reported statistically significant self-control, assertion, internalization and externalization compared to the DTC group (all $p<0.05$). Teacher reports did not reach statistical significance ($p>0.13$). At 3-month follow up, T2-T3 and T1-T3 were evaluated for children in the CFT group. For T1-T3, gains were not maintained for the child measures (all $p>0.14$) or teacher reports ($p>0.23$). However, all parent measures that were significant at T2 demonstrated gains at T3: host ($p<0.05$); internalizing and disengagement (both $p<0.025$), control ($p<0.005$) and conflict ($p<0.005$).

	common age-appropriate board games ● Had knowledge of rules to play common school yard games ● Absence of a thought disorder ● Free of clinical seizure disorder, gross neurologic disease, or other medical disorder	for play dates with other children who were present. Parent sessions occurred simultaneously in a different location for the full hr. The sessions were broken down similarly to those of their children but consisted of different topics. Segment one was 15 minutes, and the group leader reviewed performance on weekly homework assignments from the wk before. The second 30-minute segment consisted of a handout that parents looked over and asked questions about if warranted. The third 10-minute segment contained next wk's homework assignment being given and any questions being answered about that. Similar to the children's fourth 5-minute segment, children and their parents were reunited and both verbally agreed to complete the homework for the purpose of generalization. ***Control:*** **Delayed Treatment Control Condition** This was not explicitly stated. It can be assumed for those who were randomly assigned to the DTC group, intervention was given at a 12-wk delay. The structure should have been identical to that of the CFT group, just after a 12-wk waiting period.		For children in the DTC group, most outcomes were statistically significant: loneliness ($p<0.025$), self-control and internalizing (both $p<0.005$), host and assertion ($p<0.002$), externalizing ($p<0.001$) and disengagement ($p<0.0001$). Overall, the CFT group was superior to DTC on social skill & play date performance, as well as feelings of popularity and loneliness. At 3-month follow up, parent measures showed significant gains when compared to baseline.
Gabriels et al. (2015) https://doi.org/10.1016/j.jaac.2015.04.007	Level I - RCT *N* = 127 87% male 13% female	***Intervention:*** **Therapeutic Horseback Riding** Each session was a minimum of 45 minutes long and had 2-4 participants in each session. Every session had equine-related content. Behavioral teaching methods were	● Peabody Picture Vocabulary Test, Fourth Edition ● Systematic Analysis of Language Transcripts ● BOT-2 short form	THR group demonstrated significant improvements on the SRS subscales social communication and social cognition in comparison to the BA control group. Effect size

	M age = 10.2 yr Intervention group, *n* = 58 Inclusion Criteria: ● Aged 6 to 16 yr ● Met or exceeded the ASD screening cut off on the Social Communication Questionnaire ● Had an ASD diagnosis confirmed by meeting clinical cut-offs for ASD on the Autism Diagnostic Observation Schedule or ADOS-2 ● Had a combined score on the irritability and stereotype subscales of the ABC-C of equal to or greater than 11 ● Had a Leiter-R Brief nonverbal IQ standard score of equal to or greater than 40.	used if needed (visual aids, praising appropriate behaviors, etc.) and one volunteer was assigned to each participant. Each lesson was taught by a certified PATH International advanced therapeutic horseback riding instructor. Each session had a 2-part focus: therapeutic riding skills and horsemanship skills. There was also a consistent routine that was followed using a picture schedule. Every riding portion included a warmup activity, skill review, learning a new skill, lesson review, and a cool down activity. Following the riding sessions, the kids would lead the horses to tacking areas where they would learn to untack and groom, always making sure to thank their horses and their volunteers. ***Control:*** **Barn Activity Intervention** Each session was a minimum of 45 minutes long and had 2-4 participants in each session. Every session had equine related content. Behavioral teaching methods were used if needed (visual aids, praising appropriate behaviors, etc.) and one volunteer was assigned to each participant. Each session was co-led by a therapeutic horseback riding instructor and a master's level therapist who was an expert in ASD. Participants only interacted with a life-size stuffed horse while learning horsemanship skills and never interacted with a real horse. ***There was not a no treatment control group.***	● 2 subscales of the Sensory Integration and Praxis Test: Praxis on Verbal command and postural praxis ● Vineland Adaptive Behavioral Scales - 2nd edition (VABS-II) ● ABC-C ● Social Responsiveness Scale (SRS) ○ Social awareness ○ Social cognition ○ Social motivation ○ Social communication ○ Autistic mannerisms	of social communication was 0.63 (p=0.003) and effect size for social cognition was 0.41 (p=0.05). THR group had a significant increase in the amount of words spoken and the use of different words in comparison to the BA control group. The effect size for number of different words spoken was 0.54 (p=0.01) and the effect size for more words spoken was 0.54 (p=0.01). No significant between-group differences were found with the BOT-2 or SIPT.
Gantman,	Level I - RCT (pilot study)	***Intervention:*** **UCLA PEERS for**	● Autism Spectrum Quotient	According to self-reports, there

Kapp, Orenski, & Laugeson (2012) https://doi.org/10.1007/s10803-011-1350-6	*N* = 17 71% male 29% female *M* age = 20.4 yr Intervention group, *n* = 10 Inclusion Criteria: ● Between the age of 18 and 23 ● Had a previous ASD diagnosis from a clinical psychiatrist or psychologist ● Had social problems as reported by caregiver ● Was motivated to participate in treatment ● Was fluent in English ● Had a family member who was fluent in English and willing to participate in study ● Had a composite IQ score of greater than 70 on the KBIT-2 ● Scored at least a 26 or greater on the SRS ● Scored at or below 85 on the Adaptive Behavior composite score for the Vineland-II indicating clinical impairment associated with ASD reported by caregivers ● Had no history of major mental illness	**Young Adults Program** 14 weekly 90-minute sessions were done in the community. Sessions were held at The Help Group by a licensed clinical psychologist and a fellow. Participants and caregivers attended separate sessions. Lesson purpose was based around instruction and rehearsal of social skills related to building close relationships (conversational skills, electronic forms of communication, developing friendship networks and finding sources of friends, appropriate use of humor, peer entry/exit strategies, get togethers, handling teasing and embarrassing feedback, dating etiquette, peer pressure, resolving arguments, etc.). Small group format (9-10 participants) was used for instruction of social skills. Social etiquette training was provided using concrete rules and steps and Socratic questioning. Role playing exercises, modeling and structured practice were also done. Socialization homework was assigned. ***Control:*** **Delayed Treatment** This group received the same treatment as the intervention group following the first 14-wk session.	○ Self and parent report scale that measures autistic traits ■ Social skills ■ Attention shifting ■ Attention to detail ■ Communication ■ Imagination ● Vineland Adaptive Behavior Scales: Second Edition Survey Form ○ Adaptive behavioral skills and function of communication, daily living skills and socialization ● Social Responsiveness Scale (SRS) ● Social Skills Rating System ○ caregiver-report questionnaire ● Social and Emotional Loneliness Scale for Adults (SELSA) ● Empathy quotient ● Quality of Socialization Questionnaire ● Social Skills Inventory ○ Self-report	was a significant improvement in scores for the treatment group in comparison to the delayed treatment group: SELSA (social and emotional loneliness, $p<0.05$). Caregiver reports demonstrated significant improvements: SRS (social responsiveness $p<0.04$), SSRS (social skills, $p<0.01$) and EQ (empathizing, $p<0.04$). Social responsiveness subtests also demonstrated significant improvements in social communication ($p<0.04$). SSRS subscales Cooperation ($p<0.02$), Self-control ($p<0.05$), and Assertion ($p<0.05$) also all showed significant improvements. The treatment group also had a significant increase in the number of caregiver-reported invited get-togethers ($p<0.03$) and hosted get-togethers ($p<0.05$). There were significant improvements in overall social skill (social responsiveness, social assertiveness, cooperative social behavior with peers and caregivers, self-control, social communication, etc.).
Goods, Ishijima, Chang, & Kasari (2012) https://doi.org/	Level I - RCT *N* = 15 (at entry), *N* = 11 (at exit) Male:female not reported Age: 3-5 yr	***Intervention:*** **JASPER** The children in the JASPER intervention group were pulled out from the same classroom as the control group for 30-minute sessions 2x/wk for 12 wks. This intervention group worked on	● Standardized Assessments ○ Autism Diagnostic Observation Scale ○ The Mullen Scale of Early Learning ○ The Reynell	*Baseline to Entry Characteristics* ● There was no effect on play diversity (d=0.13) ● There was a moderate effect on time unengaged

10.1007/s10803-012-1644-3	Intervention group, *n* = 7 (at entry), *n* = 5 (at exit) Inclusion Criteria: ● Between ages 3-5 ● Clinical diagnosis of autism ● Attended the non-public school ● Used less than 10 spontaneous, functional, and communicative words by parent and teacher report and during the baseline or entry assessments	communicative gestures in a play-based treatment– JASPER (joint attention, symbolic play engagement, and regulation). Individual levels of play and joint attention and/or requesting gestures were identified as mastered or emerging and study personnel used toys that represented the child's interest within their play levels to help the child create play routines that would facilitate joint engagement. There were opportunities embedded within the play routines to elicit the targeted communication skills including waiting before performing steps of a routine, expanding play within routines, and balanced turn taking. ***Control:*** The children in the control group received the regular school program for 30 hrs a wk.	Developmental Language Scales ● Structured Play Assessment (SPA) ● The Early Social Communication Scales (ESCS) ● Classroom Observation Measure	(d=0.49) • There was a large effect on initiated requesting gestures (d=1.01) *Changes from Baseline to Entry* • Participants demonstrated a significant statistical decrease in play types on the SPA (p=0.01) • Participants demonstrated no significant change on ESCS *Group Differences at Exit* • For diversity of spontaneous play, the groups were significantly different (d=0.81, large effect) • During classroom observations, the intervention group spent less time unengaged (d=1.63, large effect) • The intervention group initiated more requesting gestures at exit (d=1.51, large effect) *Changes from Entry to Exit by Group* Control Group: • No significant changes on any outcome variables Intervention Group: • Significant increase in play types (p=0.04) • Significant decrease for percent time unengaged (p=0.04) • No significant change in IBR (p=0.22)

				• No significant change from entry to exit on ESCS Findings from this study suggest that young children with ASD who are minimally verbal can benefit from an intervention targeting engagement in functional activities using a naturalistic approach.
Gutman, Raphael-Greenfield, & Rao (2012) https://doi.org/10.5014/ajot.2012.003756	Level III - One Group (Multiple-Baseline, Single-Subject) *N* = 7 100% male Age = 15-17 yr Phase 1 participants, *n* = 7 Phase 2 participants, *n* = 5 Phase 3 participants, *n* = 73 Inclusion Criteria: • Diagnosis of HFA listed in IEP • Age 15-21 • Intelligence level of "normal or above as determined by high school aptitude tests • No behavioral disorder, anger management problems, or history of violence	***Intervention:*** **Motor-Based Role-Play Intervention** Participants were paired with a peer of similar age and social skill level. A social skills program occurred weekly for 1 hr sessions after school, lasting 7 wks per phase. Intervention was individualized for each participant, targeting only relevant modules based on participant interests. Sessions started with practice using movement to express and interpret emotions. Role-play activities were the main activities of each session. Participants practiced using motor behaviors underlying facial expressions, body language, and tonal inflection to make sense of the cognitive intentions and emotions of others and also communicate ideas and feelings they had. Interventions initially were completed at school, but later on they took place in the community. ***Control:*** There was not a control group in this study as it was a multiple-baseline single-subject ABA design, where A = baseline, B = intervention, A = follow-up probe. The participants were their own controls.	• Frequency of target verbal and nonverbal behaviors	Role-play intervention had a main effect of training ($p<.0001$, effect size = .85) and the linear trend was highly significant ($p<.005$), indicating sustainment over time of improvement in targeted behavior frequency. During the first intervention phase, there was a significant improvement in targeted behavior frequency ($p=.005$). In the second phase, there was significant improvement in targeted behaviors ($p=.009$). There was a decrease during the Phase 2 probe, but there was still significant improvement in comparison to the Phase 1 baseline ($p=.004$). In Phase 3, results were reported qualitatively due to the low number of participants.

Ingersoll (2011) https://doi.org/10.1007/s10803-011-1423-6	Level I - RCT *N* = 27 % male ● Intervention group 93% male ● Control group 85% male % female ● Intervention group 7% female ● Control group 15% female Age: 27-47 mo Intervention group, *n* = 14 Inclusion Criteria: ● Clinical diagnosis of autism based on DSM-IV-TR criteria ● Met the cut-off for autism or ASD on the ADOS-G	***Intervention:*** **RIT** The intervention group received RIT (Reciprocal Imitation Training) targeting object and gesture imitation. All children continued to receive their existing educational programming throughout the study. RIT uses several naturalistic techniques to teach imitation during social interaction with a responsive partner. Therapists imitated the child's verbal and nonverbal behavior, described the child's actions, and expanded the child's utterances. To teach imitation, therapists modeled an action once a minute on average. Actions were modeled up to 3 times with verbal descriptions of the action. If the child did not imitate the action within 10 seconds of the third model, the therapist physically prompted the child for imitation. ***Control:*** The children in the control group received treatment as usual in the community. All children continued to receive their existing educational programming throughout the study.	● The Early Social Communication Scale (ESCS) ● Measure of Initiation of Joint Attention (IJA) ● The Social-Emotional Scale of the Bayley Scales of Infant Development, 3rd Edition ● The Motor Imitation Scale ● The Unstructured Imitation Assessment	The RIT group had a higher frequency of joint initiations than the control group on the ESCS over time ($p<.05$). The RIT group made significantly more joint attention initiations at follow-up and post-treatment than pre-treatment ($p<.05$). The Social-Emotional Scale measuring social and emotional development had a significant effect of time meaning the parents rated their children higher at follow-up than at pre-treatment ($p<.01$). The RIT group also made more gains on the Social-Emotional Scale than the control group at follow-up, but both groups had higher scores on this measure at follow-up than pre-treatment ($p<.05$). Results from this study indicate that a focused, low-intensity intervention that targets imitation can improve social functioning in children with ASD.
Ingersoll, Wainer, Berger, & Walton (2017) https://doi.org/10.1080/17518423.2016.1278054	Level II - Case Control *N* = 9 78% male 22% female *M* Age = 55.67 mo	***Intervention:*** **Project ImPACT Intervention** During activities directed by the child, developmental and naturalistic behavioral techniques were combined to facilitate engagement, encourage initiations from the child, and teach new play and language skills.	● Social engagement ● Language ● Play ● MacArthur Bates Communicative Development Inventory (MCDI)	There was a medium to strong effect (NAP range = .78-1.00) for all children except Child 9 (NAP = .51) for social engagement. The overall average NAP was .85 [90% CI = .71-.99] indicating the intervention had a medium to strong effect on social

	Language and Play Separately group, *n* = 5 Language and Play Together group, *n* = 4 Inclusion Criteria: ● Diagnosis of ASD verified using ADOS-G and DSM-IV-TR criteria	***Control:*** There was not a control group in this study as it was a non-concurrent, multiple-baseline design. Children's results were compared to baseline data.		engagement. There was a medium to strong effect (NAP range = .81-1.00) for all children on rate of language targets. The overall weighted average NAP value was .94 [90% CI = .79-1.08] indicating a medium to strong effect on rate of language targets. In regard to play, there was a medium effect for 5 children (NAP range = .66-.86), but weak effects for 4 children (NAP <.66). There was a medium effect with a weighted average NAP value of .68 [90% CI=.53-.82]. There was a significant increase on the MCDI (p<.05, d=-.63).
Kamps et al. (2015) https://doi.org/10.1007/s10803-014-2340-2	Level I - RCT *N* = 95 84% male 16% female Age: Kindergarteners and 1st graders (62 mo of age through 82 mo of age) Intervention group, *n* = 56 Inclusion Criteria: ● Attending a public kindergarten ● Partially included in a regular classroom with access to their neuro-typical peers ● Able to follow simple instructions ● Have a minimum of 2-3-word	***Intervention:*** **Peer Network** The peer network intervention involved putting the students with ASD in social groups with their *trained* neuro-typical peers to enhance communication and social skills. This was implemented by providing the children with table-top games according to their age. Both peer mediation and direct instruction were used in this intervention. There were 5 specific skills taught in this intervention: requests and shares, comments about one's personal objects and actions, comments about others' objects and actions, politeness and compliments, and play organizers. ***Control:*** The children in the comparison group received specialized education services as included in their IEP. These participants did not receive structured social sessions. This group	● Total Communicative Acts ● The Vineland Adaptive Behavior Teacher-Scale Report (VABS) ● Teacher Ratings of Classroom Social Behaviors (TIS)	There were significant differences for the peer network intervention group over time compared to the control group for initiations to peers during non-treatment social probes (p=0.033), but not for responses (p=0.482) or total communication (p<0.164). The intervention group also showed significant differences in growth by time for natural interactions with peers during generalization probes (p=0.033), but not for responses (p=0.238) or total communication (p<0.150). The longer the children were in the intervention, the bigger increase in total communicative acts (p<0.000).

	phrases of verbal communication • Score of 50 or higher on the PPVT-4	was engaged with the same number of neuro-typical peers for social comparison. The peers in the comparison group were not trained. This group went about their typical day in their regular classroom.		The significant increases occurred after approximately 1.5 yr in school. *Vineland Communication Subtest* • Scores improved over time for both grades and groups • There was a main effect for group by time interaction in First grade ($p=0.0187$) meaning that first grade students showed the fastest rate of growth *TIS* • TIS ratings for Kindergarten and First Grade had a significant effect for time ($p<0.0001$) and interaction of group x time (K, $p=0.0002$; grade 1, $p=0.0325$) • TIS scores improved over time for both grades and groups, however the intervention group's scores improved much more overtime than the control group. Results from this study confirm prior research that children in a peer network intervention will learn to better communicate with their peers.
Kasari et al. (2016) https://doi.org/10.1111/jcpp.12460	Level I - RCT *N* = 137 Male:female not reported	***Intervention:*** **SKILLS** The SKILLS intervention group required that children with ASD participate in groups with students outside of their own classroom. This intervention targeted a specific set of social skills:	• The Friendship Survey • The Playground Observation of Peer Engagement (POPE) • Nominations to and from child with ASD	The results of this study indicate that there were no significant changes in social network salience over time according to the treatment group ($p=.974$), but there was a

	Age: 6-11 yr Intervention group, *n* = 76 Inclusion Criteria: ● Diagnosis of autism ● IQ greater than or equal to 65 ● Between the ages of 6-11 yr old ● In elementary school grades 1-5 ● Educated in a general education classroom for a minimum of 80% of the school day	being a social detective, greetings and goodbyes, body talk, humor, conversation, dealing with teasing, perspective talking, dealing with emotions, and friendship tips. Each session began with the children checking in and reviewing the lesson and homework from the previous session. The group then participated in an interactive lesson where the topic of the day was introduced and completed an activity to practice that targeted skill. The children were given homework each wk. The children had time for free play during the sessions. A treasure box with rewards was presented every other session. Group leaders facilitated group rapport, praised skills, emphasized including others, and used punch cards for children to earn rewards from the treasure box. ***Intervention:*** **ENGAGE** The ENGAGE intervention group paired targets with ASD with other students from their own class. This group included children with ASD and their typically developing peers to model social behaviors and foster friendships. The ENGAGE intervention targeted peer engagement and acceptance using shared interests of the group to provide context for interactions. The typically developing peers in this intervention group were encouraged to take the leadership of their own group with supervision from adults as needed. Each session, the group would collectively establish a daily schedule in order to encourage group cohesiveness. Activities included		fair effect of overall improvements for the groups combined (p=.059). The effect of treatment did not vary by site (p=.149). All children significantly increased in percentage of time spent in engagement with peers over the course of the study (p=.003); however, there was a significant treatment effect for the children in the SKILLS group. The SKILLS group participants improved significantly more than the children in the ENGAGE group (p=.040). The SKILLS intervention group decreased significantly in the percentage of time spent in isolation compared to the ENGAGE intervention group (p=.002). The number of children nominated by a child with ASD did not change with treatment (p=.161), similarly, the number of children who nominated a child with ASD did not significantly change (p=.220). Results of this study indicate more consistent support for a skills-based, social skills group of all children with social challenges like the SKILLS intervention is more effective than the ENGAGE

		conversational exercises, structured games, free play, improvised storytelling, and music. Group leaders would facilitate play as needed, fading out of activities as soon as the children were able to play independently. ***Control:*** There was no control group.		intervention. This study also highlights the importance of an individualized treatment approach for children with ASD.
Kasari, Rotheram-Fuller, Locke, & Gulsrud (2012) https://doi.org/10.1111/j.1469-7610.2011.02493.x	Level I - RCT *N* = 60 90% male 10% female *M* age = 8.14 yr CHILD-assisted; *n* = 15 PEER-mediated; *n* = 15 PEER and CHILD; *n* = 15 Control; *n* = 15 Inclusion Criteria: ● Met criteria for ASD on the ADI-R and ADOS administered by blind independent psychologists ● Fully included in a regular education classroom at least 80% of the school day ● Between the ages of 6-11 yr old ● In grades 1-5 ● IQ of 65 or higher (assessed using WISC-IV) ● No additional diagnoses	***Intervention:*** **Child-assisted (CHILD) Intervention** During lunch period, a trained interventionist met with children with ASD for 20 min twice/wk. for 6 wks for direct instruction, including role playing and practice with the interventionist to target child-specific deficits and developmentally appropriate skills. Skills were practiced to mastery one at a time. ***Intervention:*** **Peer-mediated (PEER) Intervention** Interventionists taught typically developing children from target children's' classrooms how to engage with children with social challenges. The peers met in a group for 20 min twice/wk for 6 wks during recess or lunch with a trained interventionist. Interventionists taught strategies on how to engage with children who were isolated on the playground by giving social support through modeling, role playing, direct instruction, and rehearsal. ***Intervention:*** **Both PEER and CHILD Interventions** Children received both interventions as described above. ***Control:*** The control group did not	● Playground Observation of Peer Engagement ● Social network salience (SNS) ● Teacher perception of social skill (TPSS) ● Social Network Survey ○ indegrees	Post-treatment, children who received PEER intervention and CHILD intervention had larger gains in SNS in comparison to the CHILD intervention (p=.006, d=1.12) and control (p=.003, d=1.18). Children who received CHILD and PEER intervention had marginally significant differences for SNS in comparison to the PEER group (p=.007, d=.069. At follow-up, children who received CHILD and PEER interventions had significantly higher SNS in comparison to children in the CHILD group (p=.014, d=0.97). However, there were not significant differences from the PEER group (p=.48) or control group (p=.38) on SNS. Children who received PEER interventions spent less time in isolation on the playground during follow-up (p=.005, d=0.77) in comparison to children who received CHILD-assisted intervention (p=.54). Children in the PEER group significantly increased joint engagement at follow-up (p=.005, d=0.77) Children in

		receive either intervention.		the PEER group significantly increased teacher-reported social skill rating (p=.01, d=0.44). The PEER group had a significant increase in the number of received friendship nominations (p=.02, d=0.74). No significant findings for the number of outward friendship nominations, rejections, or reciprocal friendships
Kretzmann, Shih, & Kasari (2015) https://doi.org/10.1016/j.beth.2014.03.006	Level I - RCT *N* = 24 67% male 33% female *M* age = 8.3 yr Intervention group, *n* = 13 Inclusion Criteria: ● Identified as having ASD on their IEPs ● Fully included in general education curriculum	***Intervention:*** **Remaking Recess (Received treatment immediately)** Paraprofessionals were trained on intervention and how children with autism may have social challenges. They were also provided with 2 wks (8-10 sessions) of active coaching sessions on the playground. Following the active coaching, the researcher provided consultation for the next 6 to 8 sessions. The final 2 wks no coaching or consultation was provided. Coaching was provided for: ● Identifying unengaged children or children who appeared to be struggling to interact with peers on the playground ● Modeling strategies to encourage children to engage with each other (starting age appropriate games/activities) and facilitate interactions Total of 16 sessions per school. There were fidelity checklists done for paraprofessionals. ***Control:*** **Wait-list condition:** No treatment. All children received the same intervention, but the wait-list control group received treatment	● Playground Observation of Peer Engagement ○ Duration of peer engagement (amount of time actively engaged in games, conversations, interactions with peers). ● Paraprofessional Intervention Fidelity ○ Specific intervention behaviors.	Treatment x Time children in IT intervention group were more engaged on the playground than the WL control group: F(1,108) = 10.68, p=.002. Peer engagement in the IT group more than doubled and had a strong treatment effect of 1.27. The strong effect for the IT group was maintained at follow-up: F(1,35) = 6.76, p=.014.

		following the intervention group.		
LaGasse (2014) https://doi.org/10.1093/jmt/thu012	Level I - RCT *N* = 17 76% male 24% female *M* age = 7.58 yr Intervention group, *n* = 10 *Inclusion Criteria:* ● Formal documentation of ASD ● English as primary language ● No dual disability ● No group music treatment in the past 2 yr ● Ability to commit to therapy 2 times/wk for 5 wks with less than 2 absences	***Intervention:* Group Music Therapy** Participants were randomly selected for the treatment group (MTG, n=9). Children were then split into small groups of 3-4. The groups met for 50 minutes 2 times a wk for 5 wks to receive a group music therapy intervention led by a music therapist. Interventions were held in treatment rooms with video cameras recording the sessions. Intervention included a welcome/farewell exercise and social and sensory experiences. Treatment included the same components as the SSG control, but with added music elements. Treatment addressed skills related to social interaction including eye gaze, communication, and joint attention. Two other staff members were present to assist with logistics. Parents completed the SRS before and after the 5-wk intervention. Parents completed the ATEC before the study, after sessions 2, 4, 6, as well as 3 days and 3 wks after the study completion. Therapists/teachers completed the ATEC after sessions 2,4,8, and 10. ***Control:*** Participants were randomly selected for the control (SSG, n=8). The control group involved a social skills group intervention, addressing the same social interaction skills of eye gaze, communication and joint attention. The difference between the control and treatment groups consisted of the addition of musical elements in the treatment group.	● SRS: Social Responsiveness Scale. ● ATEC: Autism Treatment Evaluation Checklist.	**Significant between group differences:** Eye gaze towards persons: p=.022 Joint attention with peers: p=.031 Intervention group (MTG) demonstrated higher means. No significant between group differences: Initiation with communication with another child: p>.05 Response to communication: p>.05 Social withdraw/behaviors: p>.05
Laugeson,	Level I - RCT	***Intervention:* PEERS for Young**	● Social Responsiveness	Findings of this study suggest

Gantman, Kapp, Orenski, & Ellingsen. (2015) https://doi.org/10.1007/s10803-015-2504-8	N = 22 % male: ● Treatment group: 77.8% ● Control group: 75% % female: ● Treatment group: 22.2% ● Control group: 25% Age: 18-24 yr Intervention group, *n* = 12 Inclusion Criteria: ● Between 18-24 yr of age ● Previous diagnosis of ASD from a licensed mental health or medical professional ● Had social problems as reported by the caregiver ● Willing and motivated to participate in the treatment ● Fluent in English ● Had a caregiver who was fluent in English and willing to participate in the study ● Composite IQ score >70 on the Kaufman Brief Intelligence Test- 2nd edition (KBIT-2) ● Scored >26 on the caregiver-reported Autism Spectrum Quotient (AQ)	**Adults Experimental Condition** By the flip of a coin participants were randomly assigned to either receive the treatment immediately (experimental condition) or to receive the treatment after 16 concurrent wks (delayed-control condition). Young adults and their caregivers in this condition went to a weekly 90-minute social skills group session called the PEERS for Young Adults for 16 consecutive wks. This social skills session was delivered in a community mental health context, that focused on three things: A) making and keeping friends; B) developing and maintaining romantic relations; and C) managing peer conflict and rejection. These social skills were taught using role-play demonstrations, in vivo homework assignments, didactic lessons and behavioral rehearsal exercises while in session. Outcomes were measured at baseline (pre-test), post-test, and at the 16-wk follow up using measures for social functioning. ***Control:*** **Delayed Treatment Control Condition** For those who were randomly assigned to the DTC group, there was a waiting period of 16 wks, but then the structure was identical to those who received the experimental condition. Outcomes were measured at baseline (pre-test), post-test and at the 16-wk follow up using measures for social functioning.	Scale (SRS) ● Social Skills Rating System (SSRS) ● Quality of Socialization Questionnaire (QSQ) ● Empathy Quotient (EQ)	that PEERS for Young Adults is effective at improving overall social skills, social skill knowledge, reducing ASD symptoms related to social responsiveness, and frequency of social engagement in pre- to post-test comparisons between the two groups. Improvements in social motivation, assertion and cooperation were seen, while also observing an overall increase in organized get-togethers and frequency of peer interactions. It was also found that there was a decrease in restricted interests and repetitive behaviors. Most of the improvements that were made during treatment were maintained at the 16-wk follow up with new improvements in different areas, such as responsibility, empathy, increased social communication and assertion for the treatment group, and responsibility for the DTC group. Findings from this study are consistent with previous research on this intervention, specifically finding that individuals in the treatment condition had improvements in overall social skills, social skill knowledge, frequency of get-togethers, empathy and social responsiveness. This study, however, highlights the constancy and efficacy in

				improving the social skills with high-functioning adults with ASD with caregiver assistance. There is strong support from previous research in conjunction with this study that supports the effectiveness of the PEERS for Young Adults Intervention for advancement, generalization and lasting effects of social skills in relation to the development and preservation of relationships. All outcomes were statistically significant with p values <.05.
Lerner & Mikami (2012) https://dx.doi.org/10.1177/1088357612450613	Level II - Case Control Study *N* = 13 100% male *M* age = 11.1 yr SDARI, *n* = 7 Skillstreaming, *n* = 6 Inclusion Criteria: ● Previous diagnosis of high functioning autism spectrum disorder (HFASD)	***Intervention:*** **Skillstreaming** Skillstreaming focuses on teaching correct behavior steps to use in social situations. These steps include (a) define the skills (b) model the skill (c) establish skill needed to (d) engage in role-play (e) provide feedback and (f) assign skill homework. Intervention consisted of 90 min meetings 1x per wk after school for 4 wks. ***Intervention:*** **Sociodramatic Affective Relational Intervention (SDARI)** SDARI focuses on using specialized games to help promote social motivation and creativity for children. Instead of explicitly practicing the goal, SDARI uses activities that can intrinsically reinforce motivation for successful social interactions. ***Control:*** There was no control group.	● Measures used during treatment session: ○ Social interaction observation system (SIOS) ○ Sociometrics ○ Social Skills rating system-teacher (SSRS-T) ● Parent Report Measures: ○ Social Responsiveness scale (SRS) ○ Social Skills rating system-Parent (SSRS-P)	SDARI participants liked and interacted more with each other after a single session when being compared to Skillstreaming participants. Skillstreaming participants increased peer liking and interaction over the course of intervention, while SDARI participants slightly decreased in interest. Parents reported no change in social functioning at home. All children had a significant increase in social preference over time (p=.03). All other outcome measures did not have significant results.

Locke, Rotheram-Fuller, Harker, Kasari, & Mandell (2019) https://doi.org/10.1016/j.rasd.2019.02.002	Level II - Case Control *N* = 92 88% male 12% female *M* Age = 8.4 yr Practice-Based Model; *n* = 14 Research-Based Model; *n* = 45 Inclusion Only Model; *n* = 33 Inclusion Criteria: ● ASD classification through the education system ● Appropriate language abilities to engage with others without assistive technology	***Intervention:* Practice-Based Intervention** Throughout the school yr, school personnel implemented an adapted evidence-based social skills group four days/wk during lunch for 30-45 min. One day was used for social skill building in a group format with children with ASD and typically developing peers. Following lunchtime, structured games were facilitated by school personnel between children with ASD and the peers on the playground. School personnel participated in the game and coached the children as needed. ***Intervention:* Research-Based Intervention** See Kasari, Rotheram-Fuller, Locke, & Gulsrud (2012) ***Control:* Inclusion Only Model** Care as usual in the general education classroom for at least 80% of the day	● Playground Observation of Peer Engagement (POPE) ● Social network centrality	During playground observation, children in the Practice-Based Model spent significantly less time in solitary engagement (p=.04) than those in the Research-Based Model. Children in the Practice-Based Model also had a higher rate of successful initiations than children in the Research-Based Model (*p* = .04). Children in the Inclusion Only Model did not show significant differences in the percentage of time spent in solitary engagement and number of initiations to peers from children in the other two models. Children in the Practice-Based Model (p = .05) and the Inclusion Only Model (p < .001) had lower social network centrality than children in the Research-Based Model. Children in the Research-Based Model had significantly higher social network centrality (p = .05)
Matthews et al. (2018) https://dx.doi.org/10.1007/s10803-018-3504-2	Level I - RCT *N* = 44 82% male 18% female *M age* = 15 yr Traditional PEERS Intervention group, *n* = 10	***Intervention:* Traditional PEERS** PEERS is a parent assisted, psychoeducational social skills intervention for adolescents with ASD without intellectual disability. Intervention includes didactic lessons, role plays, behavioral rehearsal, and homework assignments to teach social skills. Parents attend a separate session in which they learn strategies for helping the teen apply newly acquired	● Social Responsiveness Scale (SRS) ● Social Skills Improvement System (SSIS) ● Quality of Socialization Questionnaire- parent version (QSQ-P) ● Quality of Socialization Questionnaire- adolescent version (QSQ-A)	Parent reports demonstrated a large and significant effect of improvement in adolescents' social skills (*p* <.01, Cohen's *d*=1.35) when in the PEERS with Peers group. Adolescents with ASD reported results demonstrate a large and significant effect of

	PEERs with Peers intervention group, *n* = 12 Inclusion Criteria: ● An independent DSM-IV of DSM-5 ASD diagnosis confirmed by classification of autism or autism spectrum on the ADOS-2 ● 13-17 yr of age ● Spent at least 80% of educational time in general education setting at an in-person high school ● Parent reports that the adolescent has difficulty making and/or keeping friends ● Parent willingness and ability to attend the intervention and serve as a social coach ● Verbal IQ of 70 and above ● Willingness to be randomly assigned to a study group	skills. ***Intervention:*** **PEERS with Peers** Uses the same curriculum and format of the Traditional PEERS model but included a typically developing peer mentor for every adolescent with ASD. Peer mentors received training on their roles as peer mentors and participated in groups activities. ***Control:*** Delayed Treatment control (DTC) DTC included adolescent participants with ASD but waited to receive traditional PEERS curriculum until after the 3rd data collection point. Participants continued with treatment as usual during their waiting period.		improvement in social skills understanding in the Traditional PEERS group ($p <$ .001, Cohen's d=3.15) and the PEERS with peers group (p<.001, Cohen's d= 4.24) Adolescent reports also demonstrate a large and significant effect of improvement in hosted get togethers in the Traditional PEERS group ($p <$ .05, Cohen's d=1.25)
Morgan et al. (2018) https://doi.org/10.1037/ccp0000314.	Level I - CRT (cluster) *N* = 197 students 81.2% male 18.8% female *M* age: 6.79 yr Intervention group, *n* = 118 students Inclusion Criteria: ● Enrollment in K-2 at the beginning of the school yr in either a general education or special education classroom ● A diagnosis, either clinical or	***Intervention:*** **CSI (Classroom SCERTS Intervention)** The children in the CSI group received 3 main intervention steps: an assessment and selection of foals, the CSI Educational Planning Grid was used to select priority goals and objectives, and coaching was provided in order to guide teachers to implement CSI across classroom activities with the primary aim of improving students' AE and social communication. Teachers in the CSI group received initial training and ongoing coaching throughout the study. As teachers mastered implementation, CSI coaches reduced support and allowed the teacher greater independence.	● The Classroom Measure of Active Engagement (CMAE) ○ Instructional Participation ○ Social Interaction ● The Peabody Picture Vocabulary Test, 4th Edition (PPVT-4) ● The Vineland Adaptive Behavior Scales, 2nd Edition (VABS-II) ● The Social Responsiveness Scale (SRS) ● The Social Skills Rating System (SSRS)	*Active Engagement* ● CSI group demonstrated significantly higher scores in social interaction at the end of treatment (d=0.34, small to moderate effect size) *Vocabulary* ● PPVT-4 results at the end of treatment indicated no significant difference between groups on change in receptive language (p=0.33) *Parent-Reported Measures* ● The CSI group made significantly greater

	educational, of Autistic Disorder, PDD-NOS, or Asperger Syndrome as defined by DSM-IV ● No presence of severe motor delay/impairment, dual sensory impairment, or history of TBI	***Control:*** **ATM (Autism Training Modules)** The children in the ATM group continued with their usual school-based education condition. The Autism Training Modules (ATM) were composed on a website with links to training modules. ATMs were designed to support teachers educating students with ASD. The Training modules included an overview of ASD, a guide to educational programming for students with ASD, and a tutorial on visual supports. Access to the ATMs were made available to the teachers at the start of the study but their use of the site was not required for participation. Teachers in the ATM group did not receive additional education or coaching.		strides on the Vineland Communication subscale (d=0.31) • There were no differences between groups for the Socialization subscale *Teacher-Reported Measures* • The CSI group showed significantly greater gains in social skills in the subscale of the SSRS and the SRS Total Score (d=0.45 and d=-0.43, small to moderate effect size) • The CSI group had significantly larger decreases in problematic behaviors on a subscale of the SSRS at EOT (d=-0.36) Findings from this study suggest that there are far greater outcomes in social participation, adaptive communication, social skills, reduction of problem behavior, and executive functioning for students in a CSI classroom in comparison to students in an ATM classroom, however effects are modest across significant outcomes.
O'Haire, McKenzie, McCune, Slaughter (2014) https://dx.doi.org/10.1089/acm.	Level I - RCT *N* = 65 78% male 22% female *M* age = 8.9 yr	***Intervention:*** **Animal Assisted Activities (AAA) program.** Children in the AAA group participated in an 8-wk program that consisted of 16 20 min. interactive sessions with a guinea pig. 2 20 min sessions were usually conducted per wk. The program consisted of two main components: 1)	● Pervasive developmental disorder behavior inventory (PDDBI) ● Social skills rating system (SSRS)	Teachers perceived a significant increase in AAA participant's social approach behaviors ($p<0.001$), as well as parents noticing a significant increase ($p<0.025$) . Teachers also noticed a significant decrease in social withdrawal

2013.0165	Intervention group, *n* = 27 Inclusion Criteria: ● Previous independent diagnosis of ASD, Asperger's Disorder, Pervasive Developmental Disorder, or Autistic Disorder	animal care and 2) animal interaction. AAA sessions were conducted in groups of 3 children with ASD, and two other typically developing students were randomly selected from the classroom to partake in sessions also. ***Control***: The other children not selected for the AAA group were placed on a waitlist to receive the AAA intervention after 8 wks.		behaviors ($p<0.001$), as well as parents noticing a significant decrease for participants in the AAA group. ($p<0.01$). Teachers and parents also noticed an increase in social skills following the AAA program ($p<0.01$).
Schohl et al. (2014) https://doi.org/10.1007/s10803-013-1900-1	Level I - RCT *N* = 58 81% male 19% female *M* age = 13.65 yr Intervention group, *n* = 29 Inclusion Criteria: ● Chronological age between 11 and 16 yr ● Social problems as reported by parent ● English fluency for adolescent ● Parent/family member fluent English speaker and willing to participate in study ● No history of adolescent major mental illness, such as bipolar disorder, schizophrenia, or psychosis ● No history of hearing, visual, or physical impairments which precluded the adolescent from participating in PEERS activities	***Intervention:*** **PEERS Intervention (EXP)** Weekly 90-min sessions over 14 wks. Parents and adolescents both completed separate sessions and were taught about making friends and maintaining them and how to implement rules learned from the intervention. Homework was assigned and reviewed every session. Each wk, specific social skills were taught and role play occurred. Parent sessions addressed how to help their adolescents with homework. ***Control:*** **Waitlist Control Group (WL)** These participants did not receive treatment until approximately 13 wks after the experimental group.	● Quality of Socialization Questionnaire ● Friendship Qualities Scale ● Social Skills Rating System ● Social Interaction Anxiety Scale	The EXP group significantly increased hosted get-togethers on the QSQ-A-R ($p < 0.001$) and the WL group did not. The EXP group significantly increased invited get-togethers on the QSQ-A-R ($p < 0.0005$ and the WL group did not. The EXP group significantly decreased social anxiety on the SIAS ($p < .0005$). No significant findings were found for SSRS social skills scales for teacher and parent data, nor FQS data.

	• Previous and current diagnosis of either HFA, AS, or PDD-NOS, with current as assessed via ADOS • Adolescent verbal IQ of 70 or above assessed via Kaufman Brief Intelligence Test-Second Edition			
Soorya et al. (2015) https://dx.doi.org/10.1016/j.jaac.2014.12.005	Level I - RCT *N* = 69 83% male 17% female *M age* = 10.05 yr Intervention group, *n* = 35 Inclusion Criteria: • 8-11 yr old • Diagnosis of ASD • Verbal IQ score greater than 70	***Intervention:*** **Seaver-NETT.** NETT (nonverbal communication, emotion recognition, and Theory of mind Training) is a targeted cognitive behavioral social skills training group curriculum and uses targeted and top-down processing approaches. This group received intervention for 12 wks consisting of 90- minute weekly sessions led by therapists trained in the respective treatment model. Sessions consisted of 15-minute free play, 60-minute instruction, and 15-minute wrap up/circle. Groups consisted of 4 to 6 children with ASD with 2 to 3 therapists. The intervention group also had a concurrent parent group that would have 30-minute weekly sessions that would teach parents rationale for target skills, homework review, and discussion of challenges and barriers. ***Control:*** The control group only participated in facilitated play as their intervention. The group received intervention for 12 wks consisting of 90- minute weekly sessions. Sessions consisted beginning with a review of a posted visual schedule, a check-in circle, activity time, and wrap-up. Groups consisted of 4 to 6 children with ASD with 2 to 3 therapists. Therapists used a treatment manual to	• Parent-reported Social Responsiveness Scale (SRS) • Children's communication checklist-2 (CCC-2) • Diagnostic Analysis of Nonverbal Accuracy-2 (DANVA2) • Strange Stories Test	The NETT treatment group showed significant improvement in social behavior impairments, especially at post treatment. The NETT treatment group also had better composite scores than the control group at all 3 data collection points. There was a significant effect of improvement in nonverbal communication, empathic responding, and social relations from baseline to endpoint in the NETT intervention group. There was a large significant effect (p= .04, Cohen's d = 0.88) of improvement in nonverbal communication, empathic responding, and social relations from baseline to endpoint in the NETT intervention group.

		provide a supportive environment based on the interests and abilities of the group members. Stations were made by the therapists to support object play with objects such as LEGOS, board games, drawing, and dramatic play. There was also a parent concurrent group that participated in 30-minute weekly sessions that consisted of support and was facilitated by the lead therapist.		
Wong (2013) https://doi.org/10.1177/1362361312474723	Level I - RCT *N* = 34 88% male 12% female Age: 3-6 yr JA-SP intervention group, *n* = 14 SP-JA intervention group, *n* = 10 *Inclusion Criteria:* ● Clinical diagnosis of autism from a licensed psychologist or neurologist ● Receiving special education services under the federal category of autism ● Did not have additional syndromes	***Intervention:* Symbolic play then joint attention (SP-JA)** 8 session play and joint intervention that consisted of an individualized approach for the teachers (group activities, entire class, one-on-one, etc.). There was not a specific standard to how the intervention was provided, this intervention focused more on the content (play and joint attention). Each session every wk began with a 10-15-minute observation of the classroom by the interventionist. Training sessions lasted approximately 1 hr for the teachers. All sessions progressed in learning implementation strategies for the intervention. Of the 8 sessions, the first 4 were focused on play and the second 4 were focused on joint attention. ***Intervention:* Joint attention then symbolic play (JA-SP)** All elements of this intervention group are the same as the previous intervention group. However, the first 4 wks were focused on joint attention and then the second 4 wks were focused on play. ***Control:* Wait-list control period**	● Classroom observation ○ Engagement states ○ Supported joint ○ Joint attention ○ Child responsive JA ○ Child initiating JA ○ Play ○ Child functional play ○ Child symbolic play ● Early Social-Communication scales ○ Nonverbal initiations, responses to joint attention, behavior regulation or requesting behaviors, and social interactions ● Structured play assessment ○ Frequency and level of spontaneous symbolic play ● CARS ● MSEL ● Teacher Questionnaire ● Teacher acceptability of intervention	Significant effects were observed in joint engagement for children whose teachers had received intervention training in comparison to the children whose teachers had not received intervention training ($p = 0.03$, $d = 0.063$). Classroom observation demonstrated significant increases in some areas (joint engagement $p<.001$, joint attention responses/initiations $p<.05$, and symbolic play acts $p<.05$) but the semi-structured assessments only showed significant positive changes in joint attention responses, $p<.05$. No matter the intervention type, after 4 sessions the children were demonstrating improvements in joint engagement with a large effect size in comparison to the wait-list intervention group. However, the children whose teachers learned the JA first had more increases in joint

		then further randomized to either SP-JA or JA-SP The wait-list group proceeded as usual for 4 wks until they were able to begin the intervention. Teachers on the wait-list control group did not receive any instruction or intervention during the first 4 wks of this study.		engagement and attention initiations. Significant increases in play and joint attention were not found until after the 8 sessions. These effects sizes were small-to-medium. This study suggests that the most important aspect might be to simply teach these skills to young children of autism rather than how the teaching is done. Children with autism need more instruction regarding these topics in comparison to typically developing peers.
Wood, Fujii, Renno, & Van Dyke (2014) https://doi.org/10.1007/s10803-014-2097-7	Level I - RCT *N* = 13 77% male 23% female *M* age = 8.77 yr Intervention group, *n* = 7 *Inclusion Criteria:* ● Clinical diagnosis of ASD ● IQ above 70 ● No disabilities that would inhibit participation ● If applicable, a stable dose of medications (if in intervention group) ● If in the intervention group, must agree to no additional psychotherapy Services ● Must meet criteria for an	***Intervention:* Cognitive Behavioral Therapy** A version of the Cognitive Behavioral Therapy program, *Building Confidence* was implemented. 32, 90-minute weekly sessions were held at a university or autism clinic. 30 minutes were spent with the child and 60 were spent with the family. This intervention includes exposure to feared situations and coping skills training. "Friendship training" and social skills coaching were also implemented in the school setting as a part of therapy, which included components such as compliment-giving, good sportsmanship, and discussing others' thoughts and feelings prior to entering a social situation. A suppression approach was utilized to reduce socially inappropriate behaviors such as flapping in public. ***Control:*** The control group were given	● ADOS (Autism Diagnostic Observation Schedule) ● Bauminger's Observational Measure of Social Communication Behavior ● SACA (The Service Assessment for Children and Adolescents-Service Use Scale)	**Statistically significant group differences:** solitary: d=1.47 p<.05 any peer interaction: d=1.36 p<.05 positive or appropriate interaction with peers: d=1.62 p<.05 **No statistically significant difference:** Negative behavior: d=.50 p>.05 Children in the treatment group displayed significantly less solitary behavior and participated in significantly more social interactions than the children in the control group.

	anxiety disorder	a list of mental health clinics and were instructed to receive psychosocial intervention from one of these providers for 16 wks. After the initial 16 wks, the control group received the same CBT intervention as the treatment group.		